

## **B) AMENDMENTS TO SPECIFICATIONS    April 16, 2005**

**10/038,459**

### **[1] Line 1, page 2 (examiner's comment No. 1)**

#### **FIELD FILED OF THE INVENTION**

This invention relates generally to a precision non-symmetrical waveguide probe and a universal impedance transformation section for launching microwave signals for broad band applications. More particularly, the invention relates to an end-launcher with a non-symmetrical waveguide probe for operation in both vertical and horizontal polarization and with improved frequency bandwidth.

### **[2] Page 10 – page 11 (examiner's comment No. 2 and No. 3)**

To form a microwave end launcher with controlled polarization and improved frequency bandwidth, the non-symmetrical waveguide probe (40) is mounted at one end (7) of the pin of a feedthrough (1), as shown in Fig. 3(a). The feedthrough is mounted in a major wall (28) of a conductive housing (20). The conductive housing has two broad walls (20b), a major exterior wall (28a) and is formed by metals or alloys. There are threaded holes (20a) for the mounting of a waveguide section. The long axis (42a) of the second arm (40) of an L-shape non-symmetrical waveguide probe is aligned to be substantially parallel to the major exterior wall (28a). Inside the conductive housing there are MMICs and components. To facilitate the mounting of a waveguide section (50, in Fig. 3(c)) for receiving and guiding the microwave signals excited by the non-symmetrical waveguide probe, a universal launcher adapter (51', Fig. 3(b) or 51 in Fig. 3(d)) is provided. The universal launcher adapter (51) as shown in Fig. 3(d) is constructed by metals, alloys or plastic materials with layers of metals coated on all walls. A

through channel (52) is arranged in the center region of the broad wall (53). The through channel is defined by two long walls (55), defining a height (55a), and two short walls (54), defining a width (54a). Both the width (54a) and height (55a) of the through channel are selected to be the same as that for the inner cavity (58) of the waveguide section (50) used, which has two broad waveguide walls (56) as shown in Fig. 3(c). To facilitate the mounting of the universal launcher adaptor (51) to the major exterior wall (28a Fig. 3(a)), two screw holes (51b) are provided. To allow the mounting of the waveguide section (50) to the universal launcher adaptor (51), threaded holes (51a, 51b') are provided. Here threaded holes (51a) are aligned to screw holes (50a) in a flange (50b) in the waveguide section (50 Fig. 3(c)). The waveguide section (50) has a waveguide (50') with two broad walls (56) and two narrow walls (56') defining a waveguide channel (58). Dimensions of cross-section of the waveguide channel (58) are substantially the same as those of the through channel (52) in the universal launcher adaptor. The universal launcher adaptor (51') in **Fig. 3(b)** ~~Fig. 3(e)~~ is similar to that of the adaptor (51) and is constructed by metals, alloys or plastic materials with layers of metals coated on all walls. A through channel (52) is arranged in the center region of the broad wall (53). The through channel is defined by two long walls (55), defining a height (55a), and two short walls (54), defining a width (54a). Both the width (54a) and height (55a) of the through channel are selected to be the same as that for the waveguide channel inner cavity (58) of the waveguide section (50) used, which has two broad waveguide walls (56). To facilitate the mounting of the universal launcher adaptor (51') to the major exterior wall (28a Fig. 3(a)), two screw holes (~~51b~~) are provided. To allow the mounting of the waveguide section (50) to the universal launcher adaptor (51), threaded holes (51a) (~~51a, 51b~~) are provided. Here threaded holes (51a) are aligned to screw holes (50a) in the flange (50b) in the waveguide section (50 Fig. 3(c)). It is noted that the universal launcher adaptor (51) is similar to the universal launcher adaptor (51') except that the long walls (55) for adaptor (51) are perpendicular the long walls (55) of adaptor (51'). By providing a precision slot (54s in Fig. 3(e)) in one of the two short walls, the universal launcher adaptor also serves as a universal impedance transformation section. Another universal lunched adapter (51'') may also be connected to the same universal conductive housing as shown in Fig. 3(a).

There are four screw holes (51a), one in each corner of the broad wall (53) of the universal launcher adapter. Positions of the four screw holes (51a) are arranged to match the positions of four screw holes (50a) in the flange (50b) of the waveguide section (50) for mounting purpose. There are additional four screw holes (51b) ~~(51b, 51b')~~ in the universal launcher adapter (51). Positions of two (51b) of the four screw holes are arranged to match the positions of two screw holes (20a) in the major wall (28) of the conductive housing (20) when mounted in one position. Positions of two ~~other~~ screw holes (51b') are also arranged to match the positions of the two screw holes (20a) in the major wall (28) of the conductive housing (20) when mounted in the other position (see Fig. 3(d)).